READY REMOTE

Model 24923
Installation Guide

Directed® ELECTRONICS

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Important information

Government Regulations and Safety information

Read the *Government Regulations* and *Warning! Safety First* sections of this manual prior to operating this system.

Warning! Failure to heed this information can result in death, personal injury or property damage and may also result in the illegal use of the system beyond its intended purpose.

Guide Translations

If you want a Spanish or French version of this expanded Installation guide, please download it from www.readyremote.com and click on On-Line Tech Support.

Estimado Cliente:
Si buscas los guías de instalación/del usario, por favor de bajar lo del Soporte Técnico en-línea en el sitio www.readyremote.com

Cher consommateur:
Si vous désirez une version française ou espagnole du guide d'utilisateur ou d'installation, veuillez s.v.p. le télécharger à l'adresse suivante: www.readyremote.com en appuyant sur l'icône <<On-line Tech Support>>.

Installation tools

- Digital Multi-Meter
- Drill
- 1/4 Drill Bit (for hood pin switch)
- Screwdrivers (Phillips and Flathead)
- Wire Stripper
- Solder Iron
- Electrical Tape
- Pliers
- Crimping Tool
- Safety Glasses

Note: The installation tools listed above may be optional. The required tools will vary.

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Installation overview

Be sure to read this section thoroughly and view the Do-It-Yourself Installation DVD video that came with your system in its entirety before starting the installation. Pay special attention to all warnings to prevent personal injury or damage to your vehicle.

Register at **www.readyremote.com** to gain access to our vehicle database where you can get specific installation information for your vehicle. If needed, additional hardware to support the features you want, is identified.

Ensure you have or can borrow items listed in the Tools required section of this guide.

If you find that this installation is too difficult to perform, please visit the *Professional Installer Network* section of the ***www.readyremote.com*** web site or visit ***www.proinstall.com*** to contact one of our 7,000 authorized retailers to have the product professionally installed.

- Verify that the transmission is set to park and that the parking brake is set before beginning installation.
- On vehicles with air bags or supplemental restraint systems (SRS) you may notice a bright yellow tube with small wires in it, marked SRS, underneath the steering column near the key cylinder. DO NOT tamper or unplug these for any reason to prevent costly damages to your vehicle or personal injury. Tampering may cause unintended deployment of airbags.
- This system is intended for automatic, fuel-injected vehicles only. Installation in any other vehicle is contrary to its intended use.

Warning! Failure to properly install this product may result in costly damages, personal injury, or both.

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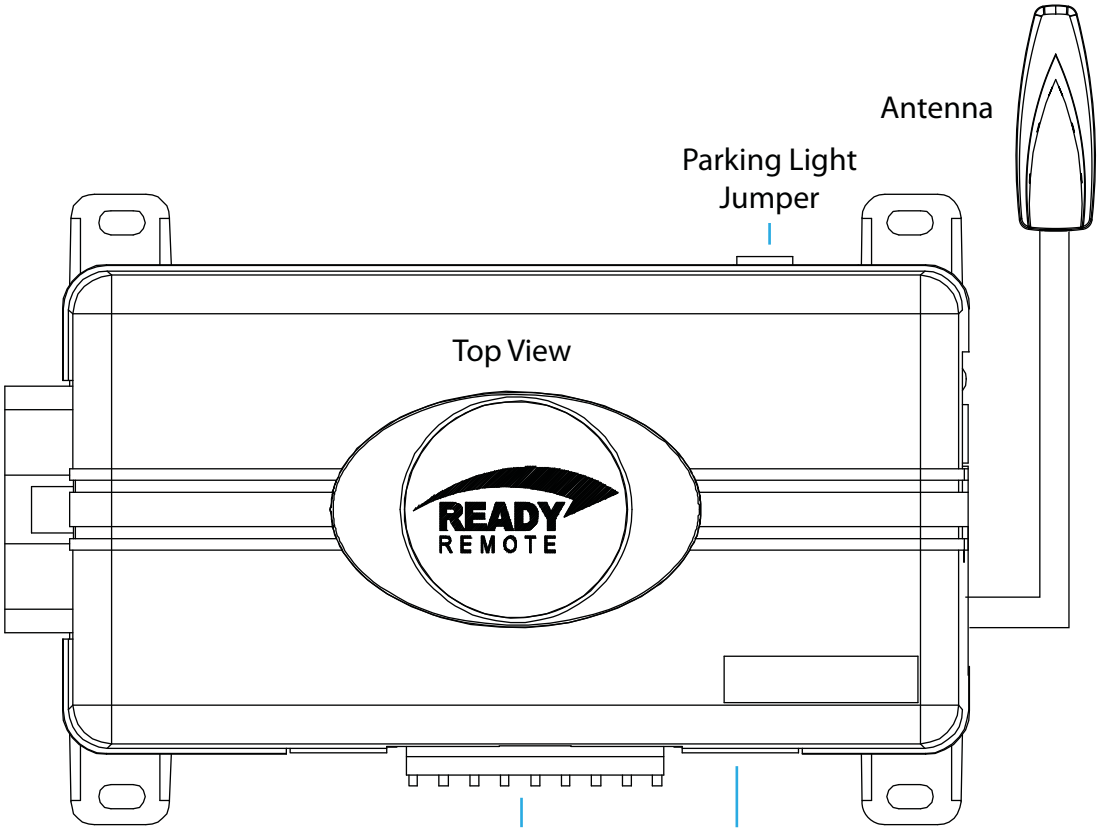
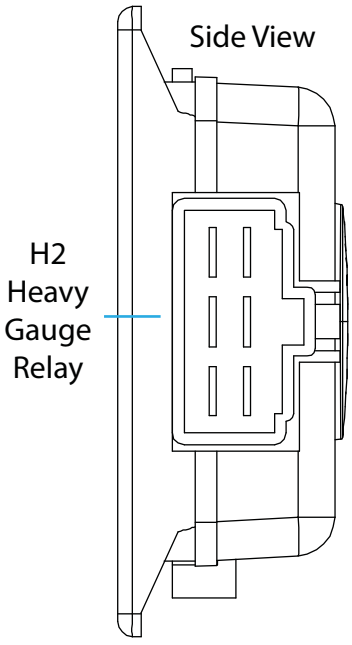
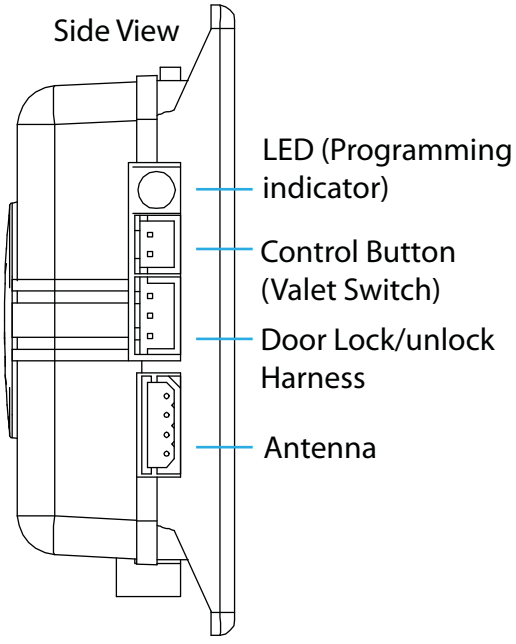
Wiring schematic







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Wiring connections

Main Harness (H1), 9-pin connector

H1/1	LIGHT GREEN BLACK	(-) 200mA FACTORY ALARM DISARM
H1/2	GREEN/WHITE	(-) 200mA FACTORY ALARM REARM
H1/3	EMPTY	NOT USED
H1/4	WHITE/BLUE	(-) ACTIVATION INPUT
H1/5	EMPTY	NOT USED
H1/6	BROWN	(-) 200mA HORN OUTPUT
H1/7	RED/WHITE	(-) 200mA TRUNK RELEASE (CHANNEL 2) OUTPUT
H1/8	BLACK	GROUND
H1/9	WHITE	(+/-) LIGHT FLASH OUTPUT

Heavy gauge relay harness, 6-pin connector

H2/1	PINK	OUTPUT TO PRIMARY IGNITION CIRCUIT, 30A (+)
H2/2	PURPLE	OUTPUT TO STARTER CIRCUIT, 30A (+)
H2/3	ORANGE	OUTPUT TO ACCESSORY CIRCUIT, 30A (+)
H2/4	RED	(+) 30A HIGH CURRENT 12V INPUT
H2/5	PINK/WHITE	PROGRAMMABLE OUTPUT, 2nd IGNITION/ACCESSORY CIRCUIT 30A
H2/6	RED	(+) 30A HIGH CURRENT 12V INPUT

Door lock - 3 pin connector

1	LIGHT BLUE	(-) UNLOCK
2	EMPTY	NOT USED
3	GREEN	(-) LOCK

Auxiliary harness (H3), 5-pin connector

H3/1	BLACK/WHITE	(-) NEUTRAL SAFETY SWITCH INPUT
H3/2	VIOLET/WHITE	TACHOMETER INPUT WIRE
H3/3	BROWN	(+) BRAKE SHUTDOWN INPUT WIRE
H3/4	GRAY	(-) HOOD PIN SWITCH SHUTDOWN WIRE
H3/5	BLUE/WHITE	(-) 200 mA 2ND STATUS/REAR DEFOGGER

Control button (valet switch), 2-pin connector

1	BLACK	INPUT
2	GREY	OUTPUT

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Main harness (H1) connections

Factory alarm disarm

H1/1	LIGHT GREEN BLACK	(-) 200mA FACTORY ALARM DISARM

Since many newer vehicles come equipped with a factory alarm, it is necessary to disarm it when unlocking the doors or during remote start. Do not mistake a factory alarm with an immobilizer system. They each require different disarm operations.

Locate the factory alarm disarm wire following instructions available on **www.readyremote.com.** Once the suspect wire is located, place the multi-meter's red lead to a (+)12 volt constant source and secure it. Put the multi-meter in the DC position. Then probe the suspect wire with the black lead of your meter. While probing the wire, place the key in the driver's door cylinder. Turn it to the unlock position and hold it when testing for the disarm wire. The multimeter should read 12V and will go back to 0V when the key is released.

When the correct wire has been found, solder the LIGHT GREEN/BLACK wire of the 9-pin harness to the wire that you determined to be the factory alarm disarm wire. After this wire has been connected, wrap the connection with electrical tape.

Some vehicles use a (+) trigger factory alarm system. Use the website resource to determine if your vehicle has a (+) trigger. If your vehicle has such a system, **call 1-800-477-1382 for live technical assistance,** as special wiring and an additional relay is required.

H1/2	GREEN/WHITE	(-) 200mA FACTORY ALARM REARM

This wire sends a negative pulse every time the remote start shuts down or the doors are locked. This can be used to pulse the arm wire of the vehicle's factory anti-theft device.

H1/3	EMPTY	NOT USED

H1/4	WHITE/BLUE	(-) ACTIVATION INPUT

This wire allows you to activate the Ready Remote via a pre-existing alarm or keyless-entry system. Two (-) pulses to this wire will activate remote start.

H1/5	EMPTY	NOT USED

Horn wire

H1/6	BROWN	(-) 200mA HORN OUTPUT

The Brown wire provides an output for activating the vehicle horn circuit or an external siren. The output is programmable in Feature Menu 1/1 for the desired use.

Trunk release wire

H1/7	RED/WHITE	(-) 200mA TRUNK RELEASE (CHANNEL 2) OUTPUT

The RED/WHITE wire can be used to activate a vehicle trunk release solenoid or to operate optional modules that require a negative input. Whenever the button is pressed for a few seconds the system will disarm/unlock and then activate this output. The output remains on until the transmitter button is released.

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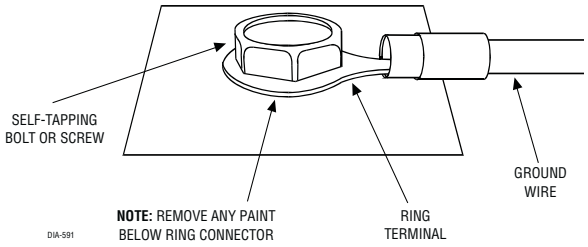
Ground wire

H1/8	BLACK	GROUND

The BLACK wire connects to the pin next to the light flash jumper fuse. First strip back a ¾-inch section of the insulation off the BLACK wire and crimp a ring terminal (not provided) to that wire. Locate a clean, paint-free metal surface in the drivers kick panel (DO NOT GROUND ON DASH). Using a self-tapping screw, drill the screw with the ring terminal to the kick panel. Once screwed down, pull on the wire to ensure a good connection.



Parking light flash

H1/9	WHITE	(+/-) LIGHT FLASH OUTPUT

There are several different types of parking light circuits. The following description is for a standard positive-triggered parking light circuit only. If the web vehicle information suggests a (-) parking light circuit, the fuse jumper (on the side of the module) must be moved to the opposite position.

Using the web information on the vehicle, locate the suspected wire. Connect the black multimeter lead to ground in the kick panel. Probe the suspected wire with the red lead of your meter. With the switch in the off position the multimeter should read 0 volts. While watching the multimeter, turn your headlight switch to the parking light position. The multimeter should read 12 volts.

While testing the suspected wire, run the dash dimmer light control up and down. The voltage should NOT vary. If the voltage does vary, then this is the wrong wire. Continue probing to find the correct wire.
Once you have identified the correct wire, solder the small WHITE wire of the 6-pin harness to it and wrap the connection with electrical tape. If your light circuit tests the opposite position, you most likely have a (-) parking light circuit.

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Heavy gauge relay harness (H2)

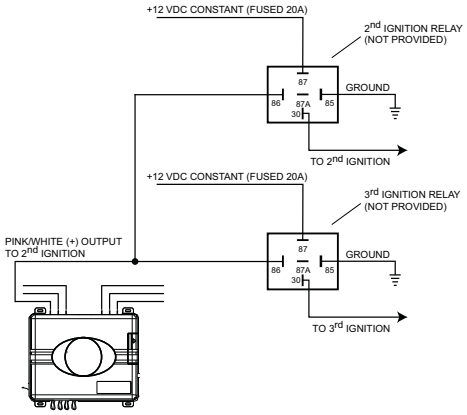
Testing for Ignition Wires

H2/1	PINK	OUTPUT TO PRIMARY IGNITION CIRCUIT, 30A (+)

With the multimeter lead still connected in the kick panel, locate the suspected ignition wire. It will test differently than constant 12 volts. Place the red lead of the multimeter on the suspected wire. With the key in the off position the multimeter will read 0. Turn the key to the on position and the multimeter will read 12 volts. Now, watching your multimeter, turn the key to the crank position. If the 12 volts stays on, then you have found your ignition wire. If the wire tests correctly, solder the PINK heavy gauge wire to it and wrap the connection with electrical tape.

If the vehicle requires more than one ignition as per the information found at **www.readyremote.com,** follow the same test procedure and solder the PINK/WHITE (H2/5) heavy gauge wire to it then wrap the connection with electrical tape. If your vehicle has only one ignition wire, secure the PINK/WHITE wire and dress it out of the way.

If your vehicle requires more than two ignitions, an additional relay (not provided) is required. Refer to the diagram below.



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Accessory and starter wires

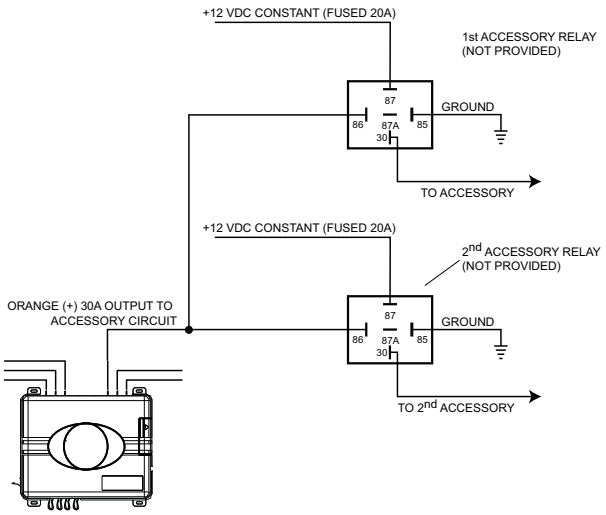
H2/2	PURPLE	OUTPUT TO STARTER CIRCUIT, 30A (+)
H2/3	ORANGE	OUTPUT TO ACCESSORY CIRCUIT, 30A (+)

The starter and accessory wires will be located in the same harness as the ignition and constant power. To find the accessory wire, leave the multimeter's black lead connected to ground. Take the red lead and probe the wire suspected to be the accessory wire. With the key off, your multimeter should read 0 volts.

Turn the key to the on position The multimeter should read 12 volts. Now turn the key to the crank position. If you have the correct accessory wire, the multimeter will read 0 volts while the starter is cranking, and 12 volts once the key returns to the on position. If the wire tests correctly, strip some insulation off and solder the ORANGE heavy gauge wire and wrap it with electrical tape.

If your vehicle requires more than one accessory and the PINK/WHITE wire is not being used for 2nd ignition, you can program the PINK/WHITE to be a 2nd accessory output. This setting may be found in *Feature Menu 2*, *Feature # 6*.

If the PINK/WHITE wire is being used for Ignition 2, an additional relay (not provided) is required for a 2nd accessory. Refer to the diagram below.



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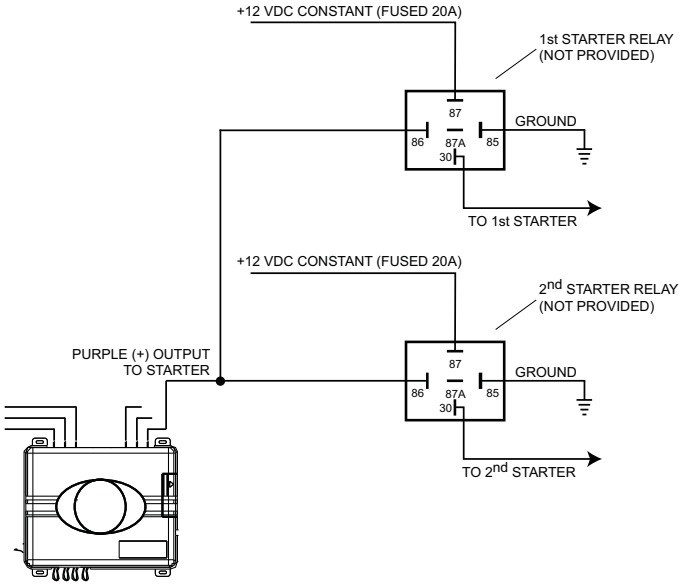
Now that the accessories have been located, find the suspected starter wire according to the web information. Leave the black lead of your tester on ground and place the red lead of your multimeter on this wire. The multimeter should read 0 volts in all key positions except the crank position. In the crank position your multimeter should read 12 volts, and will go to 0 volts when the starter disengages.

Many Nissan and Toyota vehicles have two starter wires. A relay and/or resistor (not provided) is required to hook up the additional starter wire. Refer to the diagram below.



Important! Always check **www.readyremote.com** for information on your vehicle for warnings regarding the starter wire and engine lights. Some vehicles will trip a check engine light if the starter wire is cut.

Once you locate the starter wire, cut the wire in half (check the web information before cutting) and try to start the vehicle. If the vehicle does not start, the correct wire has been identified. Reconnect both ends of the starter wire while soldering the thick PURPLE H2/2 wire of the heavy gauge wires to it and wrap the connection with electrical tape.

Ignition Output wire

The PINK wire should be the ONLY ignition output to an existing aftermarket alarm sstem. This wire will prevent the host system from sensing that the ignition is on during remote start operation.

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Additional heavy gauge harness wire description

H2/4	RED	(+) 30A HIGH CURRENT 12V INPUT
H2/6	RED	(+) 30A HIGH CURRENT 12V INPUT

Constant Power and Ignition Wires

Almost all your power and ignition wires can be found behind the key cylinder under the lower driver's side dash panel. Using the appropriate hand tools, remove the lower dash panel taking care not to break any parts. If the panel does not come off easily, check for any additional screws you may have missed.

Once the lower dash panel has been removed, locate the ignition harness at the back of the key cylinder. This is usually a group of heavy gauge wires (approximate 14ga.).

Place the black lead of the LED tester to a clean metal surface in the kick panel area and secure it. Probe one of the thicker gauge wires. **The ignition wire colors of your specific vehicle can be obtained at www.readyremote.com.**

> **Important:** More problems are attributed to poor ground connections than any other cause. Take extra care to ensure the ground is a clean metal-to-metal contact and secure.

Testing for Constant Power Wires

> **Warning!** Before making any connection to constant battery power, make sure that the two 30 amp fuses are removed from the fuse holders on the two pink 12 VOLT wires. Failure to do so may cause fire or shorting of sensitive electrical components.

With the key in the off position, test the suspect wire. The constant power wire will read 12V on the multimeter. Once the constant power wire has been identified, solder the two heavy gauge 12 VOLT RED wires from the control module to it and wrap the connection with electrical tape.

If the vehicle has two constant power wire, use both of them. Connect one of the heavy gauge RED wires to one of constant power wires and the other heavy gauge RED wire to the other vehicle constant power wire.

H2/5	PINK/WHITE	PROGRAMMABLE OUTPUT, 2nd IGNITION/ACCESSORY CIRCUIT 30A

This wire may be used if vehicle requires more than one ignition. If the vehicle does not require more than one ignition it can be reprogrammed to act as an accessory wire. This is helpful if there is 1 ignition and 2 accessory wires in the vehicle. See *Feature Menu 2* and *Programming System Features* for instructions on changing the function of this wire.

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Auxiliary harness (H3)

H3/1	BLACK/WHITE	(-) NEUTRAL SAFETY SWITCH INPUT

In most applications the neutral safety wire should be attached to a chassis ground. This does not apply to vehicles that crank the starter while the transmission is in gear. If your vehicle cranks the engine while the transmission is in gear you MUST call technical support at: **1-800-477-1382**.

H3/2	VIOLET/WHITE	TACHOMETER INPUT WIRE

Tachometer wire connections

Caution! In the following procedure DO NOT use a test light. Use of this type of tester can cause grounding of sensitive electrical components, resulting in damage, including damage to the power train control module. A digital multi-meter is required to test for this wire.

Do not wear loose clothing that could get entangled in rotating engine components. Ensure that your hands and arms are well clear of these rotating components when working in the engine compartment. Lastly, ensure that all wires and tools are clear of falling into or entanglement with these rotating components.

Identify the suspected tach wire according to the web information. Next, place the black lead of a MULTI-METER on the negative battery post and secure it. Put the multi-meter in the AC position and connect the probe to the suspect wire with the red lead of the multi-meter. Then start the vehicle with the key. With the engine at idle the multi-meter should read from .50 volts to 6 volts, and should fluctuate when you rev the engine.

Have a second person press the gas pedal to increase the RPMs and watch the meter display. When the RPMs increase the voltage should rise slightly (not all tachometer outputs will rise when engine RPM increases). Once the correct tachometer wire has been identified, turn the vehicle off.

Run the VIOLET/WHITE wire from the 5-pin harness through the firewall into the engine compartment alongside the hood pin wire. Use the same procedure as with the hood pin wire and pull the wire through the grommet, taking extra care to keep it away from any moving parts or anything that will generate extreme heat. Once the wire is run into the engine compartment, strip a small portion of insulation off the tachometer wire in the vehicle and solder the green tachometer input wire to it, then wrap the connection with electrical tape.

Important: If using a tach signal, the tach signal must be learned before using the remote start. **(See Tach learning section)**

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Safety Shutdown Wires

H3/3	BROWN	(+) BRAKE SHUTDOWN INPUT WIRE
H3/4	GRAY	(-) HOOD PIN SWITCH SHUTDOWN WIRE

With all ignition wires properly connected, find the appropriate safety shutdown wires. These are the brake wire and hood pin wires.

> **Warning!** These wires are meant to protect the vehicle and anyone near the vehicle. They MUST be connected to prevent damage to the vehicle and possible bodily injury.

First locate the factory brake wire using your multimeter. Find the switch at the top of the metal arm coming off the brake pedal. Use your vehicle specific wiring information to determine the color of this wire. With the black lead of your multimeter still in the kick panel, probe the suspected wire with the red lead of your multimeter.

With the brake pedal at reset, the multimeter should read 0 volts. While watching the multimeter, depress the brake pedal. The multimeter should read 12 volts. Once you have located the correct brake wire, solder the small BROWN (H3/3) wire in the 5-pin harness to it and wrap the connection with electrical tape.

> **Warning!** Do not use the vehicle until you confirm the operation of the brake shutdown.

Installing the hood pin switch requires drilling a hole in a metal lip under the hood. Choose a location that will allow the pin switch to be completely depressed when the hood is closed. The pin switch has a spade connector on the bottom for the wire connection.

Always wear eye protection when drilling.

Crimp your spade connector to the hood pin wire, and run the wire into the vehicle's passenger compartment through a factory rubber grommet , at the same time run the Tachometer Input wire [and Horn output wire from the Optional Harness through the fire wall. To connect them use the following steps.
Using a sharp, pointed object, poke a hole into the grommet (being careful not to damage any existing wires in the grommet) and attach the wire to the object with electrical tape. Pull the wire through the grommet, taking extra care to keep the wire away from any moving parts or anything that will generate extreme heat.

An alternative to this method would be to find a spot on the firewall with sufficient clearance on both sides and drill an access hole through the firewall. Take note of what is directly on the other side of where you are drilling as to not puncture brake cylinders, computers, etc. Once the wire is run into the vehicle and secured from any moving parts, solder the wire to the GRAY wire H3/4 of the 5-pin harness and wrap the connection with electrical tape.

> **Warning!** The GRAY wire must be connected. do not use the vehicle until you confirm the operation of the hood pin shutdown. Improper operation could result in serious injury or death.

H3/5	BLUE/WHITE	(-) 200 mA 2ND STATUS/REAR DEFOGGER

This wire may be used to activate a bypass module in default mode, or it can activate the defogger circuit when Feature Menu 2, option 8, is changed to an option setting.

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Door lock connections

1	LIGHT BLUE	(-) UNLOCK
2	EMPTY	NOT USED
3	GREEN	(-) LOCK

There are eight different types of door lock systems (Type A - H). Refer to the vehicle-specific wiring instructions on the web and the chart below to help determine which door lock system your vehicle uses. On some late model GM vehicles a door lock data interface module may be required.

Type A: Three-wire (+) pulse controlling factory lock relays.

Type B: Three-wire (-) pulse controlling factory lock relays.

Type C: Direct-wired reversing-polarity switches. The switches are wired directly to the motors. This type of system has no factory relays. Relays (not included) will be required for this type of door lock system.

Type D: Adding one or more aftermarket actuators. These include slave systems without an actuator in the driver's door, but with factory actuators in all the other doors.

Type E: Electrically-activated vacuum systems.

Type F: One-wire system - cut to lock, ground to unlock.

This is a very rare system found mainly in early 90's imports.

Type G: Positive (+) multiplex. One wire controls lock and unlock using resistor(s).

Type H: Negative (-) multiplex. Same as type G system, but uses (-) pulse instead.

All other door lock systems will require additional relays and/or resistors. A Directed Electronics 451M Doorlock module can be used for these other applications. The 451M also includes diagrams and resistors required for most applications.

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Type A: Three-wire (+) pulse controlling factory lock relays

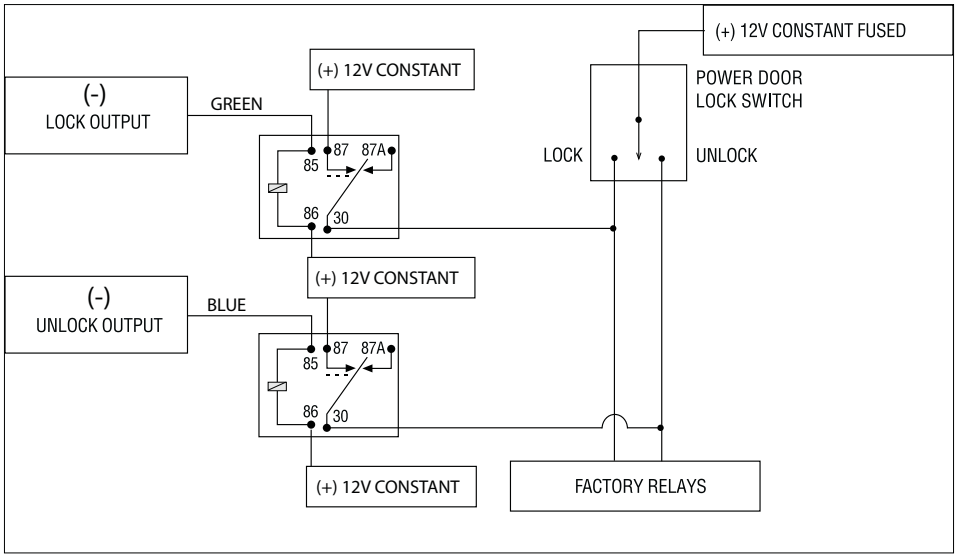
The system can control Type A door locks directly, with no additional parts. The switch will have three wires on it; one will test (+)12 volt constantly. The others will alternately pulse (+)12 volt when the switch is pressed to the lock or unlock position.
If you cannot get to the switch, and you find a set of wires that pulse (+)12 volt alternately on lock and unlock, make sure that it is not a Type C direct-wire system.

Here is a test: Cut the wire that pulses (+)12V on lock, and then operate the switch. If the locks stop working, then you have the correct wire.

Many GM vehicles use Type A locks. However, some GM vehicles are Type C. This system usually appears in older GM vehicles (1980-1995). The full-size pickups (1989-up), many of the Blazers, the Corvette, 1995 Cavalier/Sunfire 1993, and the newer Camaro/Firebird, all use Type C door locks, and cannot be controlled without relays.

Almost all newer Fords are Type B. Ford builds no Type A systems. Chrysler now uses multiplex door lock systems (Type G or H) that require relays and resistors to properly interface the circuit.

Important: Remember that these wires function in the reverse for Type A and Type B.



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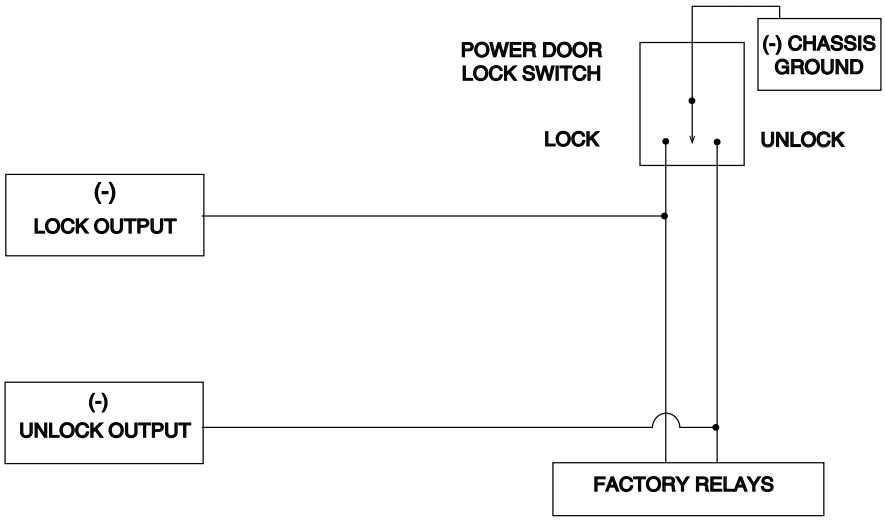
Type B: Three-wire (-) pulse controlling factory lock relays
This system is common in many Toyotas, Nissans, Hondas, Saturns, and almost all newer Fords with keyless entry systems. Use your vehicle specific wiring information to locate this wire. If you cut the wire and the locks stop working, then you are on the correct wire.



Important: If your locks operate in the reverse, (lock when pressing unlock, and unlock when pressing lock) then switch the lock/unlock wires.

Type C: Direct-wired reversing polarity switches
Interfacing with a reversing polarity system requires either two relays OR one DEI 451M (not included).
It is critical to identify the proper wires and locate the master switch to interface the door locks properly. This door lock system will be referenced on our vehicle specific wiring information sheet as a "5wi" system.

Locate wires that show voltage on lock and unlock. Cut one of the suspected wires and check operation of the locks from both switches. If one switch loses operation in both directions and the other switch operates in one direction only, you have located one of the target wires. The switch that lost all operation is the master switch.

If one switch works in both directions and the other switch works in only one direction, you have a Type A system. If both switches still operate, but one or more doors has stopped responding entirely, you have cut a motor lead. Reconnect it and continue to test for another wire. Once both wires have been located and the master switch has been identified, cut both wires and interface as shown in the following diagram.

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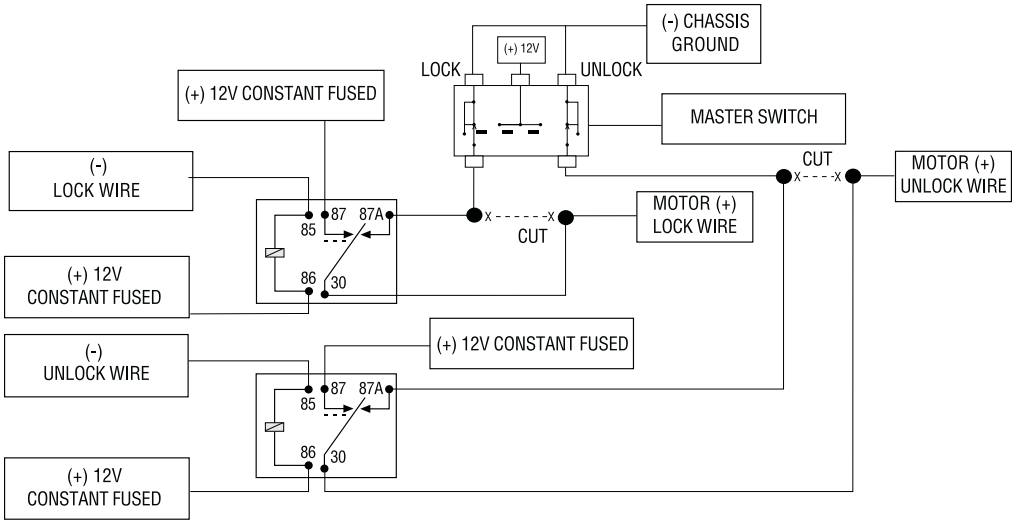


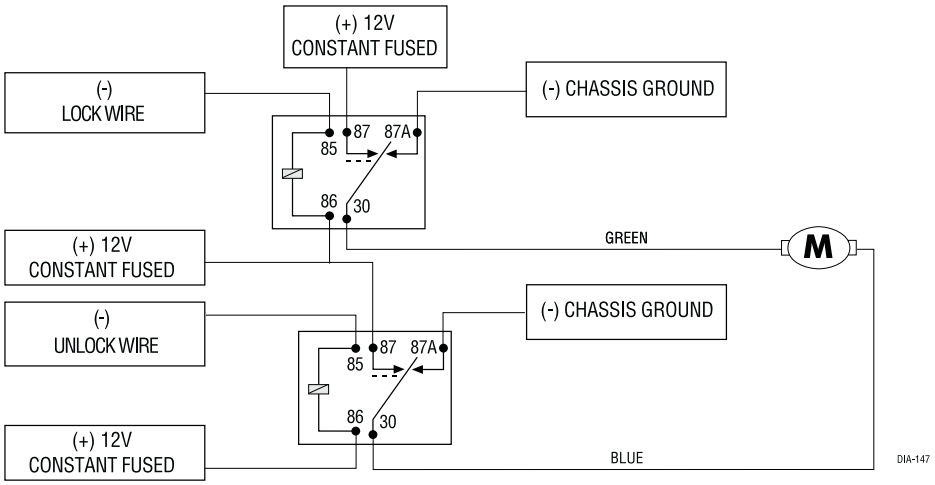
Caution! If these wires are not connected properly, (+) 12 volts will be sent directly to (-) ground, possibly damaging the alarm or the factory switch.

Type D: Adding one or more aftermarket actuators

In order for this system to control one or more aftermarket actuators, a DEI 451M (not included) or two relays are required. Vehicles without factory power door locks require the installation of one actuator per door. This requires mounting the door lock actuator inside the door.

Other vehicles may only require one actuator installed in the driver's door, if all door locks are operated when the driver's lock is used. This type of installation is required to operate factory lock systems in Volvo (except 850), SAAB, and most Kia, Mazda, Isuzu and Subaru models. The fuse used on 12 volt inputs should be 7.5A per motor installed in the vehicle.

Important: Do not connect alarm outputs directly to the actuator.



Important: Directed offers actuators available at larger retail chain stores.

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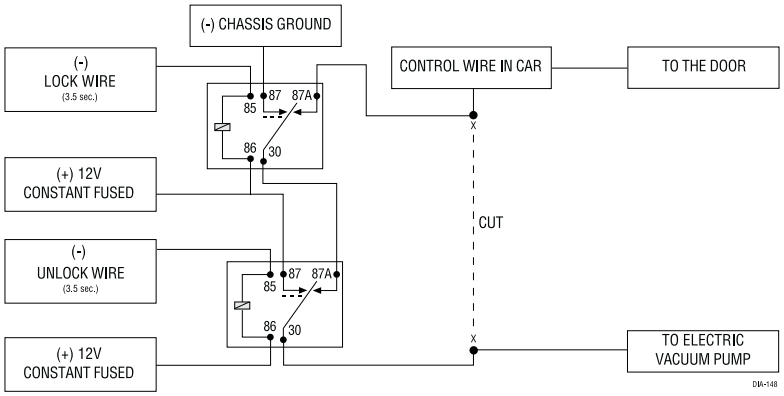
Type E: Electrically-activated vacuum systems

Type E door locks are controlled by an electrically activated vacuum pump. Some Mercedes and Audis use a Type D system. Test by locking doors from the passenger key cylinder. If all the doors lock, the vehicle's door lock system can be controlled with just two relays (optional). The control wire can be found in either kick panel and will show (+)12 volt when doors are unlocked and (-) ground when doors are locked.

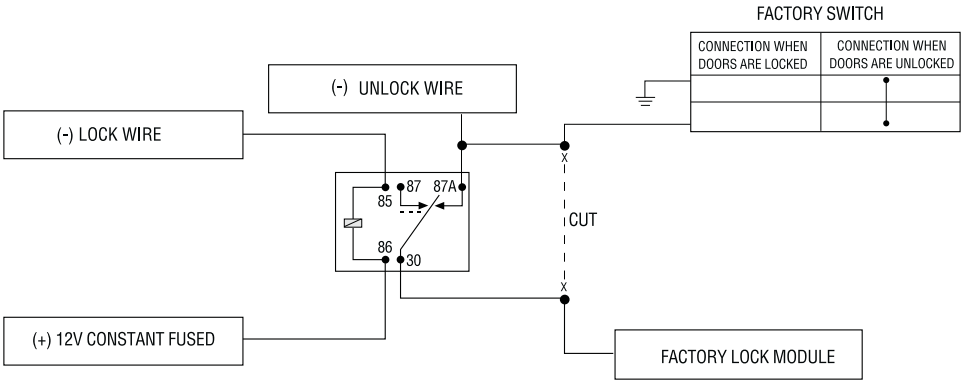
To interface, see diagram below. The system must be programmed for 3.5 second door lock pulses.



Type F: One-wire system - cut to lock, ground to unlock

Type F door locks usually require a negative pulse to unlock and cutting the wire to lock the door. In some vehicles, these functions are reversed. Type F door locks are found in late-model Hyundai, Nissan Sentras, some Nissan 240SX, and Nissan 300ZX 1992-up. They are also found in some Mazda MPV's and some Mitsubishi's.

One relay (not included) is used to interface to this type of system as follows:



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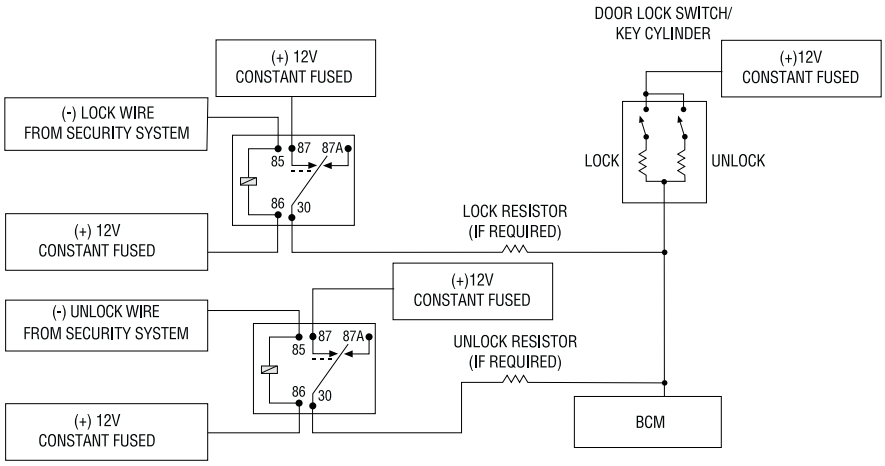
Type G: Positive (+) multiplex

This system is sometimes found in Ford, Mazda, Chrysler, and GM vehicles. The door lock switch or door key cylinder may contain either one or two resistors. When interfacing with this type of door lock system, two relays or a DEI 451M must be used.



Single-Resistor Type

If one resistor is used in the door lock switch/key cylinder, the wire will pulse (+)12 volt in one direction and less than (+)12 volt when operated in the opposite direction.

Two-Resistor Type

If two resistors are used in the factory door lock switch/key cylinder, the switch/key cylinder will read less than (+)12 volt in both directions.

Determining the Proper Resistor Values

To determine the resistor values, the door lock switch/key cylinder must be isolated from the factory door lock system. For all testing, use a calibrated digital multimeter that is set to ohms.

1. Cut the output wire from the door switch/key cylinder in half.
2. Test with the meter from the switch side of the cut door switch/key cylinder wire to a reliable constant (+)12V source. Some good constant (+) 12V references are the power input source to the door lock switch/key cylinder, the ignition switch power wire, or the battery (+) terminal.
3. Operate the door lock switch/key cylinder in both directions to determine the resistor values. If the multimeter displays zero resistance in one direction, no resistor is needed for that direction.
4. Once the resistor value(s) is determined, refer to the wiring diagram for proper wiring.

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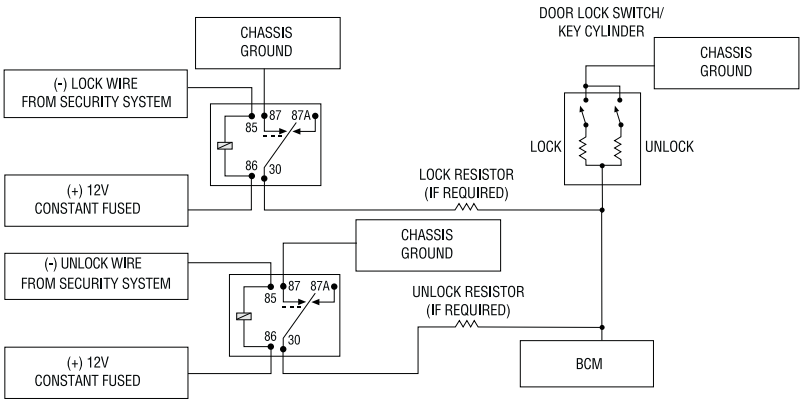
Type H: Negative (-) multiplex

The system is most commonly found in Chryslers and a few late-model GM vehicles. The door lock switch or door key cylinder may contain either one or two resistors. (See "Determining the Proper Resistor Values above)



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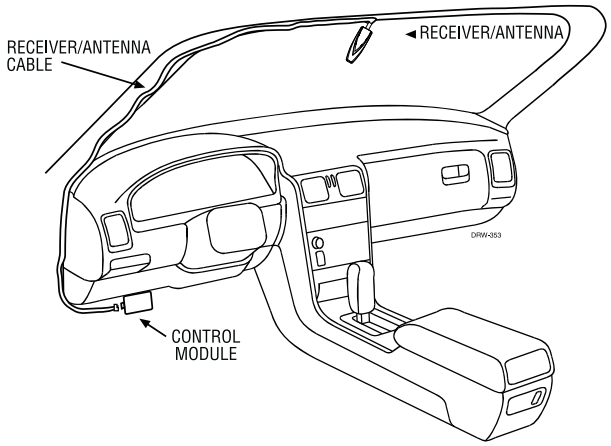
Mounting the antenna

The antenna position should be discussed with the vehicle owner prior to installation, since the antenna may be visible to the vehicle's operator.

The best location for the receiver/antenna is centered high on either the front or rear windshield. For optimal range, the antenna should be mounted vertically. It can be mounted horizontally in relation to the windshield or under the dashboard away from metal, but range will be diminished. Window tint or dot matrix (small black dots at top of windshield) can also affect range, so this should be a consideration when determining the mounting location.

After determining the best mounting location, follow these steps:

1. Clean the mounting area with a quality glass cleaner or alcohol to remove any dirt or residue.
2. Plug the receiver/antenna cable into the receiver/antenna.
3. Mount the receiver/antenna using the supplied double-sided tape.
4. Route the receiver/antenna cable to the control module and plug it into the four-pin antenna connec tor.



Important: To achieve the best possible range, DO NOT leave the antenna cable bundled under the dash. Always extend the cable full length during installation, regardless of the antenna mounting location.

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Installation points

Important: The LED mentioned in the installation section references the LED (programming indicator) on the Control Module, not on the remote control, unless otherwise stated.

Engine/voltage monitoring

During remote start, the system needs to know if the engine is running. The module does this by monitoring the voltage of the vehicle's electrical system (or the tachometer: see next section).

Vehicle electrical systems usually rest at about 12.6 volts when the engine is not running. This system is programmed to detect the rise in battery voltage that occurs when the charging circuit activates after starting, and keep the engine running if the rise is adequate. It will make up to three start attempts before discontinuing due to an inadequate voltage rise.
Some vehicles have alternators that do not activate immediately or do not increase voltage sufficiently after starting. This system will compensate by delaying the time before reading the battery voltage on the second and third start attempts. This delay will allow most alternators to activate so the remote start continues to run.

The voltage read times are:

First attempt: 10 seconds
Second attempt: 20 seconds
Third attempt: 50 seconds

After the third start attempt, if the voltage increase is still not adequate to keep the engine running, the Tachometer input option should be used to monitor the engine.

Virtual Tach

Use of Virtual Tach does not require the Tach wire to be connected.

To program Virtual Tach:

1. After the install is complete, remote start the engine. The programming operation may require 3 cranks of the starter before the engine starts and runs. Do not turn off the remote start if this happens, it is a normal programming operation.
2. Once the engine begins running, let it run for at least 30 seconds.
3. Using the Remote, send the Remote start command to turn remote start off. Virtual Tach is programmed.

Virtual Tach is not recommended for diesel vehicles. Virtual Tach handles disengaging the starter motor during remote starting – it does not address over-rev. For over-rev protection capability, the tach wire must be connected.

> Important: After successfully learning Virtual Tach, a small minority of vehicle starters may over crank or under crank during remote start. Virtual Tach fine tune can be adjusted, see *Feature Menus* and *Programming System Features*.

Tach learning

Note: Tach learning requires H3/2 Violet/White wire to be connected to Tach. If using Virtual Tach, this procedure is not required and should not be used.

To learn the tach signal:
1. Start the vehicle with the key.
2. Within 5 seconds, press and hold the Control (Valet switch) button.
3. After 3 seconds the LED on the control module lights constant when the tach signal is learned.
4. Release the Control button.

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Reset and deletion

If a feature/Virtual Tach needs to be reset or the remote controls need to be deleted, use the following procedure.

1. Turn the ignition to the ON position (The heavy gauge pink wire must be connected).

2. Within 10 seconds, press and release the Control (Valet switch)button: 2 times if you want to delete remotes, 3 times to reset features or 4 times to reset Virtual Tach. These features are described next.

   Delete remotes: This feature erases all remotes from the system memory. This is useful in cases when a remote is lost or stolen. You can program new remote controls to the system, see *Remote Control Programming* section of this guide.
   Note: This does not reset the programmed features of the system or reset the Virtual Tach setting.

   Reset Features: This resets all the system features to the factory default settings.
   Note: This feature does not delete the remotes from the system or reset the Virtual Tach setting

   Virtual Tach Reset: Deletes all previously learned values for Virtual Tach, and on the next remote start sequence the unit begins virtual tach initialization.

3. Once you have selected the function step, press the Control button once more and hold it. The LED flashes and the horn honks* to confirm the selected functional step. Do not release the Control button.

4. While holding the Control button, press the 🔒 button on the remote control. The horn honks to confirm that the feature has been successfully reset.

*Horn function is a programmable feature, it is Off by default. See Feature Menu and use Programming System Features to turn on.

Neutral safety switch interface

Some vehicles do not have an electrical neutral safety switch, but instead have a mechanical neutral safety switch that interrupts the starter wire when the vehicle is in any drive gear. The remote start must be interfaced before the neutral safety switch , to provide protection from starting in gear. However, some vehicles combine the column shift and the neutral safety switch into one mechanical part, and in this case you will not be able to interface the remote start before the neutral safety switch.

> Important: You must complete the remote start system installation before doing the following test. Ensure that the remote start system is functioning normally. This includes connecting to the brake as a shut-down.

Testing the neutral safety switch

1. Make sure there is adequate clearance to the front and rear of the vehicle because it may move slightly.
2. Make sure the hood is closed and there are no remote start shut-downs active.
3. Set the emergency brake.
4. Turn the key to the "run" position, this releases the shifter.
5. Place the car in drive (D).
6. Place your foot directly over the brake pedal, but do not depress it. Be ready to step on the brake if the starter engages.
7. Activate the remote start system.
8. If the starter engages, immediately depress the brake to shut the remote start system down. If the starter does not engage, no additional safety system is required.

If the starter engages and the vehicle is a General Motors product or Dodge Dakota pickup, refer to **www.directechs.com** for Document 1008. Check the Resource tab, for an alternative shut-down method which prevents the starter from engaging.
If the vehicle is not a General Motors product or a Dodge Dakota pickup, please call Directed Technical Support at **1-800-477-1382** for an alternative shut-down method.

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Remote start shutdown diagnostics

If the remote start activates but fails to stay running, the remote start module has the ability to inform you of what may have caused the remote start failure. Before performing shutdown diagnostics it is important that you let the remote start shut off on its own i.e. let it attempt to start 3 times then shut down, if this is not done the unit will report the shutdown you used to shut off the remote start.

Note: Shutdown diagnostics does not report if the vehicles factory immobilizer is causing the problem.

To perform shutdown diagnostics:

1. With the ignition Off, press and hold the Control (Valet switch) button
2. Turn the ignition On and then back Off while holding the Control button.
3. Release the Control button.
4. Press and release the Control button. The LED flashes to report the last shutdown for one minute or until the ignition is turned on, as shown in the following table:

LED Flashes	**Shutdown Mode**
1 flash	Runtime expired
2 flashes	Over-rev shutdown
3 flashes	Low or no RPM, low battery (voltage and virtual tach modes)
4 flashes	Transmitter shutdown
5 flashes	(-) Hood shutdown (H3/4 GRAY)
6 flashes	(+) Brake Shutdown (H3/3 BROWN)
7 flashes	Neutral safety shutdown (H3/1BLACK/WHITE)
8 flashes	Wait-to-start timed out

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Programming system features

The System Features Learn Routine dictates how the unit operates. It is possible to access and change most of the feature settings (see *Feature Menus*) using the Control (Valet Switch) button.

1. **Turn** the ignition on, then off.
2. **Select** a Menu. **Press** and **hold** the Control button. The number of LED flashes (on the control module) and horn honks* indicates the menu number. A single LED flash and honk indicates menu 1. Two LED flashes and 2 honks indicates menu 2.
3. When the desired menu LED flashes and honks occur, **release** the Control button.
4. **Select** a Feature. **Press** and **release** the Control button the number of times corresponding to the feature you wish to change. Then **press** and **hold** one more time to select the feature. The LED flashes and the horn honks to indicate which feature is selected.
5. **Program** the Feature. While holding the Control button, you can program the feature using the remote control.

For features with only two options; = option 1 while = option 2.
For features with more than two options; selects the options in ascending order. The LED flashes and the horn honks indicating which option is selected.

* Horn function is a programmable feature, it is Off by default. See *Feature Menus* and use this procedure to turn on.

Once a feature is programmed:
- Other features can be programmed within the same menu
- Another menu can be selected
- The learn routine can be exited if programming is complete

To access another feature in the same menu:
1. Press and release the Control button the number of times necessary to advance from the feature you just programmed to the next one you want to program.
2. Then press the Control button once more and hold it.

To select another menu:
1. Press and hold the Control button.
2. After 3 seconds, the unit advances to the next menu, the horn honks and the LED flashes indicating which menu has been accessed.

The learn routine exits if any of the following occurs:
- The ignition is turned On
- There is no activity for 30 seconds
- The Control button is pressed too many times

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Feature menus

Default settings are in bold type.

Menu 1

Feature #	Feature	Opt. 1	Opt. 2	Opt. 3	Opt.4	Opt. 5+
1	Horn function	**Off**	Siren 20 mS	Siren 30 mS	Siren 40 mS	Siren 50 mS
2	Ignition controlled lock	On	**Off**			
3	Ignition controlled unlock	On	**Off**			
4	Doorlock output duration	**0.8 sec.**	3.5 sec.	0.4 sec.		
5	Double pulse unlock	**Off**	On			
6	Double pulse lock	**Off**	On			
7	Factory Alarm Disarm function	**with unlock**	Before unlock	Remote start only		
8	Factory Alarm Disarm Pulses	**Single**	Double			
9	Comfort Closure	Comfort Closure 1	**Off**	Comfort Closure 2		
10	Panic	**On**	Off			

1. Horn Function
    1. Off: turns the lock/unlock horn honk output off, but Panic is still active for 60 seconds
    2. On: Opt 2-5, 20-50 mS: sets the lock/unlock horn honk output duration

2. Ign-controlled Lock
    1. On: door lock output will activate when ignition is turned on.
    2. Off: door lock output will not activate when ignition is turned on.

3. Ignition Controlled Unlock
    1. On: door unlock output will activate when the ignition is turned off.
    2. Off: door unlock output will not activate when the ignition is turned off.

4. Door Lock Output Duration
    1. 0.8sec.: the door lock/unlock pulses for 800mS
    2. 3.5sec.: the door lock/unlock pulses for 3.5 seconds
    3. 0.4 sec.: the door lock/lock pulses for 400mS

5. Double Pulse Unlock
    1. Off: unlock output pulses once
    2. On: unlock output pulses twice

6. Double Pulse Lock
    1. Off: lock output pulses once
    2. On: lock output pulses twice

7. Factory Alarm Disarm function
    1. With Unlock: Factory Alarm Disarm wire pulses as programmed, at the same time as the unlock (Blue) wire, and when remote start is activated.
    2. Before Unlock: Factory Alarm Disarm wire will pulse as programmed before the unlock wire, and

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when remote start is activated.
3. Remote start only: Factory Alarm Disarm wire will pulse as programmed during remote start only

8. Factory Alarm Disarm pulses
    1. Single: Factory Alarm Disarm wire pulses once per operation
    2. Double: Factory Alarm Disarm wire pulses twice per operation

9. Comfort Closure
    1. Comfort Closure 1: door lock pulse (or 2nd pulse for double pulses) will remain on for 20 seconds.
    2. No comfort Closure: Comfort Closure is defeated when locking
    3. Comfort Closure 2: 800mS following the end of the door lock pulse (or 2nd pulse for double pulses); door lock output will turn on again for 20 seconds.

10. Panic Mode
    1. On: Panic output can be activated at any time
    2. Off: Panic output is defeated

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Menu 2

Feature #	Feature	Opt. 1	Opt. 2	Opt. 3	Opt.4	Opt. 5+
1	Engine checking	**Virtual tach**	voltage	Off	tachometer	
2	Remote Start Engine Runtime	**12 min**	24 min	60 min		
3	Park light output	Pulsed	**Constant**			
4	Cranking time	**0.6 sec.**	0.8 sec.	1.0 sec.	1.2 sec.	1.4, 1.6, 1.8, 2.0, 4.0 sec
5	Activation pulse count	**1 pulse**	2 pulses	3 pulses		
6	2nd Ignition/Acc behavior	**Ignition**	Accessory			
7	Accessory output	**Off during wait-to-start**	On during wait-to-start			
8	Status behavior	**Normal**	Latch rear defogger	Pulse rear defogger		
9	Diesel wait-to-start timer	**Off**	Timed 15 sec	Timed 30 sec.	Timed 45 sec.	
10	Virtual tach fine tune	**0 (as learned)**	100ms to 1 sec (in 100 ms increments)			
11	Timer mode run time	**12 min**	3 min	6 min	9 min	

1. Engine checking
    1. VirtualTach: battery voltage drop/rise during cranking determines when the starter output is released. During runtime, constant voltage level is monitored to determine if the engine is running.
    2. Voltage: starter output during cranking is a programmed duration (Set in Cranking Time). During runtime, constant voltage level is monitored to determine if the engine is running.
    3. Off: starter output during cranking is a programmed duration (Set in Cranking Time). The remote start keeps the ignition/accessories active for the programmed runtime whether the engine is running or not.
    4. Tachometer: tach input signal during cranking and runtime determines when the starter output is released and if the engine is running.

2. Engine Runtime
    - 12/24/60 minutes: sets engine runtime during normal remote start operations.

3. Park light output
    1. Pulsed: the lights will pulse on/off during remote start.
    2. Constant: the lights will turn on solid during remote start.

4. Cranking time
    - 0.6/0.8/1.0/1.2/1.4/1.6/1.8/2.0/4.0 seconds: determines the starter output duration during cranking for the 'Voltage' and the 'Off' Engine Checking Mode options.

5. Activation pulse count
    - 1/ 2/ 3 pulses: sets the number of remote control commands received or Activation Input required to activate and de-activate remote start.

6. 2nd Ignition behavior
    1. Ignition 2: the relay will emulate the Ignition 1 output during remote start.
    2. Accessory 2: the relay will emulate the Accessory 1 output during remote start.

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7. Accessory output
    1. Off: the Accessory outputs will be OFF during diesel start delay.
    2. On: the Accessory outputs will be ON during diesel start delay.

8. 2nd Status behavior
    1. Normal : the output will activate before the ignition outputs turn on, and de-activate after they turn off during remote start.
    2. Latch rear defogger: the output activates 10 seconds after start. It turns off after 10 minutes or upon remote start off.
    3. Pulse rear defogger: the output activates (for 800mS) 10 seconds after start.

9. Diesel start delay
    1. Off
    2. On: Opt 2-4, Timed 15/30/45 seconds: delays the starter output.

10. Virtual Tach fine tune
    - 0 as learned: 100ms to 1 sec (in 100 ms increments)

11. Timer mode run time
    - 12/3/9 minutes: sets the runtime when the engibe is started by the Timer Mode feature.

Remote control programming

1. **Turn** key to the ON position
2. Within 5 seconds, **press** and **release** the Control (Valet switch) button one time.
3. Within 5 seconds, **press** and **hold** the Control button. The LED flashes one time and the horn honks* to confirm entry into remote programming.
4. **Press** the 🔒 button on the remote control.
5. The horn honks to confirm the remote has been programmed.
6. **Release** the Control button, and **turn** the key to the Off position.
7. The horn sounds one long honk to confirm that remote programming has been exited.

The programming routine exits if any of the following occurs:
- The ignition is turned off
- There is no activity for 30 seconds
- The Control button is pressed too many times

* Horn function is a programmable feature, it is Off by default. See *Feature Menus* and use *Programming System Features t*o turn on.

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Troubleshooting: keyless entry

Door locks operate backwards.

- This unit has easily-reversed lock/unlock outputs. Recheck wire connections to see if you have reversed these.

Troubleshooting: remote start

The remote will not activate the remote start

1. Does the neutral safety input have a ground? if the wire is not grounded the remote start will not activate.
2. Have you performed the remote start shutdown diagnostics? Sometimes an active shutdown input will report in the diagnostics.
3. Is the remote programmed to the system?
4. Can the remote start be activated manually by applying a ground pulse to the H1/4 White/Blue wire? Grounding the white/blue the correct amount of times activates remote start without using the remote.
5. Check the harnesses and their connections. Make sure that the harnesses are completely plugged into the remote start module. Make sure there are good connections to the vehicle wiring.
6. Check voltage and fuses on the system.

The remote start will activate, but the starter never engages.

1. Check for voltage on the purple starter wire two seconds after the remote start becomes active. If there is voltage present, skip to Step 5. If there is no voltage present, advance to Step 2.
2. Check the 30A fuses.
3. If the wait-to-start timer is turned on, the starter will not crank.
4. Is the tach wire connected? If so disconnect it and remote start the vehicle to see if the purple wire sends out voltage. If you get voltage, go to an alternate tach source. The tach wire you are currently on has a voltage spike when the ignition is powered up, which can cause the remote start to not send out the crank voltage.
5. Is the vehicle a Chrysler or GM with a multiplexed starter wire? The vehicle will not crank if the resistance is incorrect on the multiplexed accessory/starter wire.
6. Is the vehicle a GM? If so the PINK/WHITE 2nd accessory needs to be powered up on some of the vehicles for the vehicle to crank.
7. Does the vehicle have an immobilizer? Some immobilizer systems will not allow the vehicle to crank if active.
8. Check connections. The heavy gauge remote start input wires on the heavy gauge 6-pin connector should have a solid connection.

The vehicle starts, but immediately dies.

1. Does the vehicle have an immobilizer? The vehicle's immobilizer can cut the fuel and/or spark during unauthorized starting attempts.
2. Is the remote start programmed for virtual tach or voltage sense? If so, the crank time may not be set high enough. Voltage sense will not work on some vehicles.
3. Is the remote start in tach mode? If so has the tach been programmed to the system?
4. Check diagnostics. Sometimes a shutdown will become active during cranking or just after cranking.

The vehicle starts, but the starter keeps running.

1. Is the system programmed for engine checking off or virtual tach voltage sense? When programmed for either of these features, the engine cranks for the pre programmed crank time regardless of how long it takes for the vehicle to actually start. Adjust to a lower cranking time.
2. Was the Tach Learn successful? The LED must light solid and bright to indicate a successful learn.
3. Make sure that there is a tach signal at the purple/white tach input wire of the remote start. If there is not a tach signal, recheck the connection to the vehicle's tach wire and make sure the wire is not broken or shorted to ground leading to the remote start.

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4. Is an ignition or accessory output wire connected to the starter wire of the vehicle? Verify the color of the starter wire in the vehicle and confirm that an ignition or an accessory output is not connected to that wire.

The vehicle starts, but will only run for 10 seconds

1. Is the remote start programmed for voltage sense? If this does not work, a tach wire should be used.
2. Check shutdown diagnostics.

The climate control system does not work while the unit is operating the vehicle.

1. Either the wrong accessory wire is being energized or more than one ignition or accessory wire must be energized in order to operate the climate control system.
2. If the vehicle has an electronic climate control system some will reset when the key is turned off and then back on, unfortunately this is a function of the vehicle and cannot be bypassed.

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Owner's Guide

System maintenance
The system requires no specific maintenance beyond battery replacement for the remote controls. Your remote is powered by a coin cell battery (3V CR2032) that lasts approximately one year under normal use. When the battery begins to weaken operating range is reduced.

Battery replacement
Locate the small slot on the side of the remote control. Insert a small slotted screwdriver or equivalent tool into slot and pry the case apart. Replace battery while verifying the correct polarity and then snap case together.

Remote Control Functions

The remote control buttons are used to send commands to the system.

Standard configuration

Lock: Press on the remote control.

Panic: Press and hold for two seconds to activate panic mode.

Unlock: Press on the remote control. You can also turn Panic off with this button.

Remote Start: Press to remote start your vehicle.

Silent Mode: Press to operate Silent Mode™ or an optional auxiliary function. Silent Mode works by pressing and releasing before locking or unlocking. An optional auxiliary function such as trunk release may be controlled by pressing and holding for 2 seconds.

Car Finder: and Buttons
Car finder allows you to locate your vehicle, by having the system flash the parking lights.

To activate:
Press and release the and buttons at the same time.
The lights flash 5 times slowly allowing you to locate your vehicle.

Timer Mode: and Buttons
Timer mode is activated when these buttons are pressed simultaneously. When you activate timer mode the parking lights flash four times, after a 1-second delay the engine starts. To turn the engine off, without exiting timer mode press the .
The system remains in timer mode and will start every 3 hours for a maximum of 6 starts unless cancelled by turning on the ignition, or by activating the brake or neutral safety shutdown wires.
The parking lights flash 4 times indicating timer mode is exited.

Rear Defogger: and and Buttons
When simultaneously pressed these buttons control the optional rear window defogger during remote starting. The parking lights flash three times to confirm activation. Once activated the defogger will turn on whenever the vehicle is remote started.
The parking lights flash twice when the defogger is deactivated. The defogger does not turn on when the vehicle is remote started.

Important note: Defogger is an optional feature.

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Note: Horn function is an programmable feature, it is Off by default. See Feature Menus and Programming System Features to turn on.

Locking
Pressing 🔒 for one second locks the system (if the door locks are connected). The horn honks (see note) and the parking lights flash once to confirm the system is locked.

Unlocking
Pressing 🔓 for one second unlocks the doors (if connected). The horn honks twice and the parking lights flash twice to confirm unlocking of the system.

Panic Mode
If you are threatened in or near your vehicle, you can attract attention by triggering the system with your remote control. Press and hold 🔒 for 2 seconds to enter Panic Mode. In Panic Mode, the horn will honk and the parking lights will flash for 30 seconds. To stop Panic Mode at any time, press 🔓, or 🔒 on the remote control.

Note: In order for Panic Mode to be effective, the vehicle's horn (or optional siren) and the vehicle's parking lights must be connected.

Remote Start
This feature allows you to remotely start and run your vehicle for a programmable period of time. This makes it possible to warm up the engine, and adjust the interior temperature of the vehicle with the climate control system. If interior heating or cooling is desired, the climate controls must be preset, and the fan blower must be set to the desired level prior to remote starting the vehicle.

> ⚠ Warning! (1) Never remote start your vehicle when the keys are in the ignition, except when performing Valet Take-Over, and (2) Never start the vehicle if it is not in PARK or NEUTRAL

To remote start the vehicle:
- Press the ✳ button once (default)*.
- The parking lights flash to confirm that the vehicle is attempting to start. In gasoline vehicles the engine will start 4 seconds after the parking lights flash, in diesel vehicles the engine starts after the Wait-To-Start timer has expired (default is Off)*.
- Once the vehicle has started, it will run for 12 minutes (default)*, or until a shutdown input is triggered.

* Defaults: Remote Start Activation Pulse Count (button presses), Wait-To-Start timer and Engine Runtime can be changed, see corresponding features in *Feature Menus* and *Programming System Features*.

> ⚠ Warning! It is unsafe to operate a vehicle's motor in a garage or other closed off area. Breathing the exhaust from the vehicle is hazardous to your health. Never activate the remote start in an enclosed space.

When you are ready to drive the vehicle:
1. Insert the ignition key and turn it to the On (not the START) position.
2. Press the brake pedal. The remote start system shuts down and the engine continues to run because the ignition has been turned on.

Note: If the brake pedal is pressed before the key is in the On position, the engine will shut down.

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While the vehicle is running during remote start operation, the system monitors the vehicle and automatically shuts down the engine if it receives any of the following shut-down inputs:

- The brake pedal is pressed.
- The hood is opened.
- The shutdown toggle switch is put into the Off position.
- The pre-programmed run time (12, 24, or 60 minutes) has elapsed.
- Remote control button ✲ is pressed once.

Valet Take-Over

The Valet Take-Over feature allows the vehicle to remain running after the key has been removed from the ignition. This feature is useful for occasions when you wish to exit and lock the vehicle for short periods of time, but would like to leave the engine running and the climate controls on.

To perform Valet Take-Over:
Before turning off the engine, press and release ✲ on the remote control for 1 second.
Turn the ignition key to the Off position. The engine will stay running until the pre-programmed time has elapsed or a shutdown input is received. (See the previous Remote Start section for a complete list of shut-down inputs.)

Important: This feature will not work if the brake pedal is being pressed.

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Government Regulations

This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesirable operation.

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

This device complies with the Industry Canada Radio Standards Specification RSS 210. Its use is authorized only on a no-interference, no-protection basis; in other words, this device must not be used if it is determined that it causes harmful interference to services authorized by IC. In addition, the user of this device must accept any radio interference that may be received, even if this interference could affect the operation of the device.

Warning:
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this device.

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Warning! safety first

The following safety warnings must be observed at all times:

- Due to the complexity of this system, installation of this product must be done properly according to instructions with safety always considered.
- Failure to properly installed this system and its safety features may result in personal injurt, property damage or both.

When properly installed, this system can start the vehicle via a command signal from the remote control.

- Therefore, never operate the system in an enclosed areas or a partially enclosed area without ventilation (such as a garage).
- When parking in an enclosed or partially enclosed area or when having the vehicle serviced, the remote start system must be disabled using the installed toggle switch. It is the user's sole responsibility to properly handle and keep out of reach from children all remote controls to assure that the system does not unintentionally remote start the vehicle.

USER MUST INSTALL A CARBON MONOXIDE DETECTOR IN OR ABOUT THE LIVING AREA ADJACENT TO THE VEHICLE. ALL DOORS LEADING FROM ADJACENT LIVING AREAS TO THE ENCLOSED OR PARTIALLY ENCLOSED VEHICLE STORAGE AREA MUST REMAIN CLOSED AT ALL TIMES.

Use of this product in a manner contrary to its intended mode of operation may result in property damage, personal injury, or death. Except when performing the *Safety Check* outlined in this installation guide, (1) Never remotely start the vehicle with the vehicle in gear, and (2) Never remotely start the vehicle with the keys in the ignition. The user must have the neutral safety feature of the vehicle periodically checked, wherein the vehicle must not remotely start while the car is in gear. This testing should be performed by an authorized Directed dealer. If the vehicle starts in gear, cease remote start operation immediately and consult with an authorized Directed dealer to fix the problem.

After the remote start module has been installed, perfrom the *Safety Check* outlined in this guide. If the vehicle starts when performing the Neutral Safety Shutdown Circuit test, the remote start unit has not been properly installed. The remote start module must be removed or properly reinstalled so that the vehicle does not start in gear.

OPERATION OF THE REMOTE START MODULE IF THE VEHICLE STARTS IN GEAR IS CONTRARY TO ITS INTENDED MODE OF OPERATION. OPERATING THE REMOTE START SYSTEM UNDER THESE CONDITIONS MAY RESULT IN PROPERTY DAMAGE OR PERSONAL INJURY. YOU MUST IMMEDIATELY CEASE THE USE OF THE UNIT AND SEEK THE ASSISTANCE OF AN AUTHORIZED DRIECTED DEALER TO REPAIR OR DISCONNECT THE INSTALLED REMOTE START MODULE. DIRECTED WILL NOT BE HELD RESPONSIBLE OR PAY FOR INSTALLATION OR REINSTALLATION COSTS.

CAUTION! This product is designed for fuel-injected, automatic transmission vehicles only. Installing it in a standard transmission vehicle is dangerous and is contrary to its intended use.

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Safety check

Before vehicle reassembly, the remote system must be checked to ensure safe and trouble-free operation. The following test procedure must be used to verify proper installation and operation of the system. The installation must be completed before testing, including connection to the brake switch and hood switch.

1. Test the BRAKE shutdown circuit: With the vehicle in Park (P), activate the remote start system. Once the engine is running, press the brake pedal. The engine should shut down immediately. If the engine continues to run, check the brake circuit connection.

2. Test the HOOD PIN shutdown circuit: With the vehicle in Park (P), open the hood. Activate the remote start system. The vehicle should not start. If the starter engages, check your hood pin and connections. Note: If programmed for Diesel Mode, the system will turn on the ignition, but the starter should not engage with the hood open.

3. Test the NEUTRAL SAFETY shutdown circuit:

> **Important:** Make sure there is adequate clearance to the front and rear of the vehicle before attempting this test.

   a. Make sure the hood is closed and no other shutdown circuits are active.
   b. Set the emergency brake.
      Note: Failure to do so could result in personal injury, property damage or both.
   c. Turn the ignition key to the run position but do not start the engine.
   d. Put the vehicle in Drive (D).
   e. Put your foot over the brake pedal but do not press down on it. Be ready to step on the brake to shutdown the remote start system.
   f. Activate the remote start system.

- If the starter engages, immediately step on the brake to shut down the system. If it does engage, recheck the neutral safety input connection. The vehicle may use a mechanical neutral safety switch.

- If the starter does not engage, the test is complete. Once the system passes all three tests, the vehicle can be re-assembled. Do not the use the remote start system or finalize the installation if it fails any of the safety check tests.

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The company behind this system is Directed Electronics

Since its inception, Directed Electronics has had one purpose, to provide consumers with the finest vehicle security and car stereo products and accessories available. The recipient of nearly 100 patents and Innovation Awards in the field of advanced electronic technology. DIRECTED is ISO 9001

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